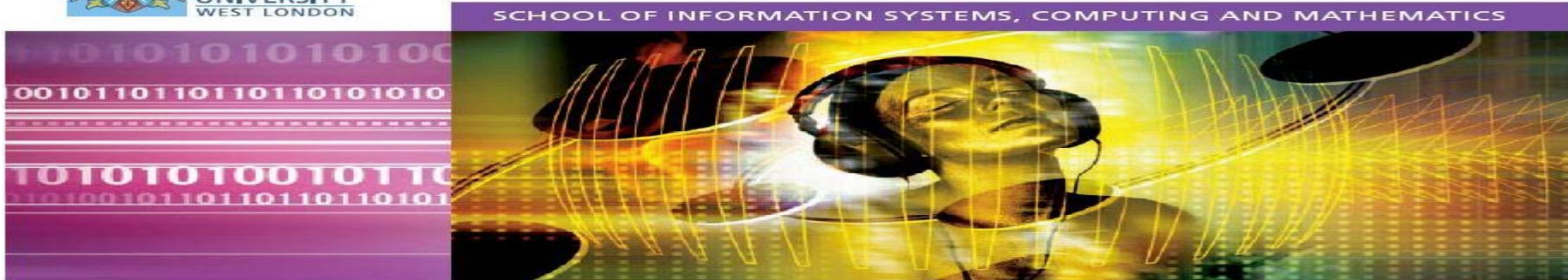


Multimedia @ Brunel



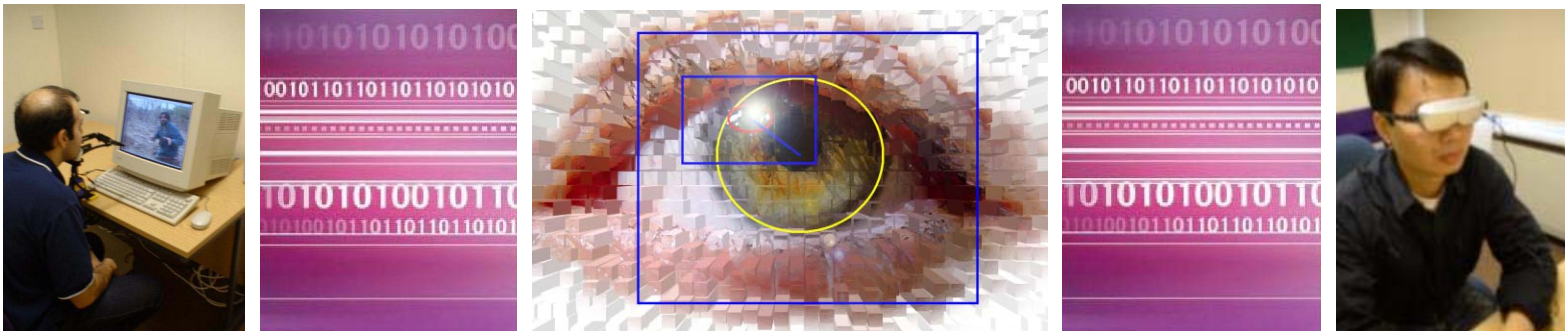
Research in the Multimedia group of Brunel University's School of Information Systems, Computing and Mathematics is concerned with multi-modal communication of value-added multimedia content for concurrent multi-use. In particular, it targets the development of value-added multimedia content modelling and compression techniques for digital storage and indexing, the development of communication protocols for concurrent multi-user and multi-modal connectivity, as well as the delivery of personalised content with Quality of Service (QoS) provision.

Ongoing research projects include:

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user perceived multimedia quality

By placing the user at the center of the computing experience, we are able to more comprehensively understand the impact that multimedia interaction and communication has on the users' cognitive state and working processes. To this end we have introduced the Quality of Perception metric, which, incorporating multimedia's infotainment duality, addresses not only a person's subjective satisfaction with the quality of multimedia content visualized but also gauges user information assimilation. Related research includes: the development of Personalised Perceptual Profiles (P³), which facilitate user-centric adaptive presentation of multimedia content, as well as work examining how information interaction is affected when it is being mediated by pervasive computing devices. Using eye-tracking we are currently investigating the perceptual impact of using adaptive Region-of-Interest and Gaze-Contingent displays to visualize multimedia content. Moreover we are also involved in the use of virtual modelling as a means of representing and analysing multidimensional user perceptual data.



development of multimedia content communication protocols with QoS provision

This work integrates previous research done by our group in the area of Quality of Perception with lower OSI-layer Quality of Service parameters. Given previously identified perceptual tolerances to multimedia degradations The aim is to develop seamless, end-to-end multimedia communication protocols that adapt according to both network and user characteristics. We are currently employing fuzzy-logic based approaches to achieve this goal and our work, of especial importance in bandwidth-constrained environments, has attracted attention from companies involved in developing and transmitting multimedia content for third generation mobile phones.

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development of semantic content modelling and compression techniques

Work in this area undertaken by our group includes digital media management, including search and retrieval by content, especially MPEG-7-enabled approaches. One current project is attempting to improve access to digital video resources by discovering the user criteria that influence browsing of digital video. Moreover we are also interested in developing digital media delivery technologies, particularly video browsers. A recently completed project has produced COSMOS-7, an MPEG-7-compliant modelling and filtering scheme

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Millenium Homes

The Millenium Homes project involved the design of user interfaces for older adults and the accommodation of dynamic diversity, whereby interactive systems can assist users' presenting a broad range of physical and/or psychological declines to facilitate effective user interaction. In a separate study we have also investigated how deafness impacts upon perceived multimedia quality.

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The usability of speech-based systems

This involves the evaluation of speech system interfaces and more recently in the human factors implications of other types of recognition technology (for instance computers which aim to recognise human emotions).

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